HP OpenView

Storage Mirroring application notes

High availability for a Citrix mainframe environment

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Legal and notice information

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Introduction

Citrix MetaFrame offers secure, Internet-based access to Windows, UNIX, and Java-based applications from virtually any device, via any connection. Storage Mirroring provides real-time enterprise data protection and replication. Storage Mirroring can be used to provide high availability and disaster recovery for the profile server that stores Citrix users' roaming profiles and home directories ensuring that Citrix users always have access to their customized user configuration and their data.

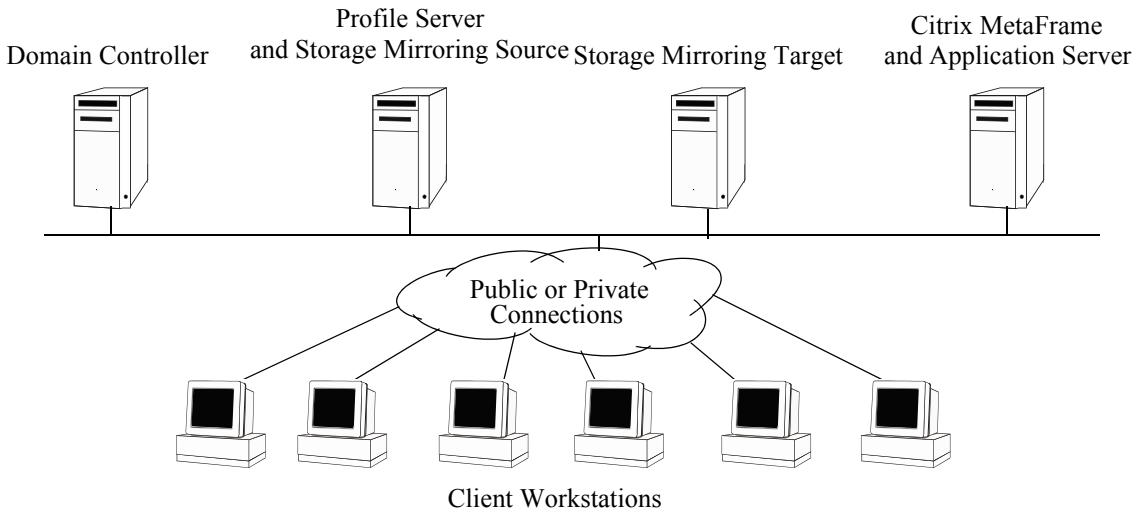
This document describes the steps necessary to configure Storage Mirroring to provide high availability for Windows 200x profile servers. These procedures allow a secondary server to assume the identity and role of a failed profile server while maintaining the availability of the roaming profiles and home directories for the Citrix users.

NOTE: Since there are other methods of providing high availability for the MetaFrame server itself, like using multiple servers with directory or load balancing features, this document only provides information for providing high availability for the profile servers.

To complete these instructions, you will install Citrix MetaFrame and Storage Mirroring, and configure Storage Mirroring for replication and failover. Due to the complexities of these applications, this document is intended for network administrators with experience installing, configuring, and maintaining network applications including Storage Mirroring and Citrix MetaFrame.

Requirements

The following diagram shows the configuration that must be used for Storage Mirroring to provide high availability for a profile server. Additionally, each component must also meet the requirements listed following the diagram.



Domain controller

- Microsoft Windows 200x with the latest service pack must be installed and properly licensed.
- Terminal Server Licensing server must be installed and running and the client licenses must be activated.
- Roaming domain accounts must be created for each Citrix user.

Profile Sever and Storage Mirroring source

The Profile Server is a member server that stores all of the roaming profiles and home directories for the Citrix users. (See *Policies and Profiles Standards* at http:\\knowledgebase.citrix.com.)

- One licensed copy of Microsoft Windows 200x with the latest service pack must be installed as a member server.
- One licensed copy of Storage Mirroring must be installed.

Storage Mirroring target

- One licensed copy of Microsoft Windows 200x with the latest service pack must be installed as a member server.
- One licensed copy of Storage Mirroring must be installed.

Citrix MetaFrame and application server

- One licensed copy of Microsoft Windows 200x with the latest service pack must be installed as a member server.
- Terminal Services must be installed and running in application mode.
- IIS and the Messenger service must be installed and running if you want to use event notification.
- A licensed copy of Citrix MetaFrame XP 1.0 must be installed and activated. (This also installs the Citrix Licensing service.)
- The latest Citrix MetaFrame service packs and feature releases must be installed and activated.
- A licensed application(s) that Citrix users will be accessing must be installed and published through Citrix MetaFrame.

Citrix client workstations

- The Citrix client software (Program Neighborhood) must be installed, or you can use an ActiveX or Java client if NFuse is installed on the Citrix Server.

Installing Storage Mirroring

Install Storage Mirroring on both the source (Profile Server) and the target using the installation defaults. See the *HP OpenView Storage Mirroring getting started guide* for details.

Configure and begin mirroring and replication

1. On the Storage Mirroring source (the Profile Server), open the Storage Mirroring Management Console (**Start**, **Programs**, **Storage Mirroring**, **Management Console**).
2. In the left pane of the Management Console, double-click the source machine to log on.
3. Right-click your source machine and select **New**, **Replication Set** and enter the desired name for the replication set.
4. Select the path to the user profiles and home directories. If you are uncertain where these files are located, you can check each Citrix users' profile to determine the path.
5. After you have selected all of the user profiles and home directories, right-click the replication set name and select **Save** to save the replication set.
6. Drag and drop the replication set onto the target and the Connection Manager dialog box opens.
7. The **Source Server**, **Target Server**, **Replication Set**, and **Route** fields will automatically be populated. If you have multiple IP addresses on your target, verify the **Route** field is set to the correct network path. (For detailed information on connecting a source and target, see the Storage Mirroring *user's guide*.)
8. Select **One to One** to map the replication set data from the source to an identical volume/directory structure on the target.
9. Click **Connect** to start the mirror and replication processes.

The mirror will create a baseline of the data contained in the user profiles and home directories and replication will keep the data synchronized. In the event of a source failure, the target will have an up-to-date copy of the user profiles and home directory data.

Configure failover and begin failure monitoring

1. On the Storage Mirroring source (the Profile Server), open the Storage Mirroring Failover Control Center (**Start**, **Programs, Storage Mirroring**, **Failover Control Center**).
2. Select the target machine from the list of available machines and click **Login**. If the target you need is not displayed, click **Add Target**, enter the machine name, and click **OK**.
3. To add a monitor for the selected target, click **Add Monitor**. Type the name of the source machine and click **OK**. The Monitor Settings window will open.
4. In the Monitor Settings window, mark the IP address that you want to monitor for failover and verify that the following default options are selected:
   - Adding Source Identity to Target
   - IP Addresses
   - Server Name
   - Share(s)
5. Under Active Directory, enable **Failover Hostname** and **Failback Hostname**.

6. If you have any failover or failback scripts, click **Scripts** and identify the location where the scripts are located. Click **OK** on the scripts dialog box to return to the Monitor Settings.

NOTE: While failover is occurring, there are two client scenarios you should be aware of and perhaps create Storage Mirroring pre- and post-failover scripts to address.

1. Users who were already logged into the Profile Server before the failure occurred will receive a retry or cancel error message if they attempt to access the data stored in their home directory while failover is occurring. A pre-failover script could be used to instruct users to wait until further notification before continuing their work. A post-failover script could then instruct them to save their work and continue working.
2. Users who attempt to log into the Profile Server while failover is occurring will receive an error message that the Profile Server is unavailable and the local copy of their profile will be retrieved from the Citrix Server. Since users' work is saved both on the Profile Server and the Citrix Server at log out, if users are logged into the Citrix Server, any updates the user makes will be saved there instead of the Profile Server. The next time they log into the Profile Server, their changes will be lost. Therefore, a pre-failover script should be used to instruct users who have just logged in and received the Profile Server unavailable message to log out and wait for further notification. A post-failover script could instruct them to login and continue working.

   See the *HP OpenView Storage Mirroring user's guide* for instructions on creating and using failover scripts.

7. Click **OK** to begin monitoring the source machine.

With mirroring and replication keeping the target up-to-date, failover will allow the target to stand in for the source if there is a source failure. For detailed information on monitoring failover, see the *HP OpenView Storage Mirroring user's guide*.

Restoring the profile server

If your source experiences a failure, such as a power, network, or disk failure, your target machine will stand in for the source while you resolve the source machine issues. During the source machine downtime, data is updated on the target machine. When your source machine is ready to come back online, the data is no longer current and must be updated with the new data on the target machine.

1. Verify that your source machine is not connected to the network. If it is, disconnect it.
2. Resolve the source machine problem that caused the failure.

NOTE: If you must rebuild your hard drive, continue with step 3. If you do not need to rebuild your hard drive, continue with step 5.

3. Install Windows and the latest service pack.
4. Install Storage Mirroring.
5. On the Storage Mirroring source (the profile server), open the Storage Mirroring Failover Control Center (**Start**, **Programs**, **Storage Mirroring**, **Failover Control Center**).
6. Select the target machine that is currently standing in for the failed source.

NOTE: Since users' profiles and home directories are saved both on the Profile Server and the Citrix Server at log out, you should notify users to save and logout before initiating failback.

7. Select the failed source and click **Failback**.
8. You will be prompted to determine if you want to continue monitoring the source server. Select whether or not you want to continue monitoring this source machine (**Continue** or **Stop**).

NOTE: Verify that the Storage Mirroring connection on the source has been disconnected (right-click the connection in the Storage Mirroring Management Console and select **Disconnect**).

9. To begin the restoration process, open the Storage Mirroring Management Console (**Start**, **Programs**, **Storage Mirroring**, **Management Console**) and select **Tools**, **Restoration Manager**.
10. Complete the appropriate fields as described below.
    - **Original Source**—The name of the source machine where the data originally resided.
    - **Restore From**—The name of the target machine that contains the replicated data.
    - **Replication Set**—The name of the replication set to be restored.
    - **Restore To**—The name of the machine where the data will be restored. This may or may not be the same as the original source machine.
11. Identify the correct drive mappings for the data and any other restoration options necessary. For detailed information on the restoration options, see the *HP OpenView Storage Mirroring user's guide*.
12. Verify that the selections you have made are correct and click **Restore**. The restoration procedure time will vary depending on the amount of data that you have to restore.
13. After the restoration is complete, you should notify the users to login and resume working.
14. Also after the restoration is complete, reestablish the Storage Mirroring Citrix replication set connection so that mirroring and replication will again synchronize the source and target.

At this time, your data is restored back to your source machine, the source machine is again the primary profile server, and, if you selected to continue failover monitoring, the target is available to stand in for the source in the event of a failure.